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Radio frequency identification system for identifying and locating golf balls in driving ranges and golf courses

Abstract

A new radio frequency identification (RFID) system identifying and locating golf balls in golf courses and driving ranges is described. The inventive device includes (1) golf balls each containing a passive RFID transponder with electronic bits of data (serial number) to uniquely identify said ball, (2) a wireless and/or wired grid of strategically located transceivers to transmit and receive electromagnetic signals to and from the passive transponder from said ball, (3) a computer server and/or database management system that maintains communication with the grid of transceivers and a database of the locations of golf balls and along with the number of golf strokes, and (4) a hand held personal data assistant (PDA) for wireless communication with the computer server and/or database management system. The passive transponder, which has a very small mass and volume, is embedded in a golf ball. The passive transponder has negligible influence on the flight dynamics of a golf ball and can withstand the extreme acceleration and impact of the golf ball. The PDA sends an electromagnetic signal which is picked up by the transceivers which in turn transmit an electromagnetic signal to the golf balls. The passive RFID transponder in said golf balls uses the energy of the electromagnetic signal via electromagnetic coupling (backscatter) to transmit its serial number to a local grid of transceivers. The location of the ball within this local grid of the transceivers is calculated by triangulation. Information on the identity and location of the ball along with the location of the transceivers are transmitted to a computer server and/or database management system, and to the PDA. The inventive device can also be used to find the distance of golf ball to the cup on the green and to the PDA.

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